Memorandum

To: *Stephanie Vaughn (USEPA)*
Elizabeth Buckrucker (USACE)

From: *Scott Kirchner (CDM Smith)*
George Molnar (CDM Smith)

Date: *October 17, 2013*

Re: *Status Report*
CPG Oversight of Chemical Water Column Monitoring High Volume Events
Lower Passaic River Restoration Project

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) provided oversight of the Cooperating Parties Group (CPG) remedial investigation/feasibility study (RI/FS) field activities associated with the high volume portion of the chemical water column monitoring (CWCM) program in the Lower Passaic River (LPR). The Louis Berger Group, provided oversight of sampling conducted in Newark Bay.

CDM Smith oversight activities were conducted in late December, 2012 and mid-June, 2013. Oversight included observations of the collection of samples within the LPR. In addition, CDM Smith also collected split samples at select locations. All activities were conducted in accordance with the CPG *Quality Assurance Project Plan, Remedial Investigation Water Column Monitoring/High Volume Chemical Data Collection*.

Copies of field logbook notes can be found in Attachment 1. Copies of the chain of custody (COC) records for split samples are provided in Attachment 2.

General Summary
This summary report covers oversight activities conducted by CDM Smith within the LPR. Sampling events and oversight within Newark Bay are not discussed.

Oversight consisted of observations of in-river activities conducted by CPG contractors AECOM. Ocean Surveys Incorporated (OSI) provided vessel and sampling support.

In summary, the following locations within the LPR were sampled during both events:

- Above Dundee Dam
- River mile (RM) 4.2
- RM 10.2

Upon arrival at each location, the datasonde of a water quality instrument (and inlet end of sampling tubing) was lowered through the water column until it was 3 feet off the bottom as determined by the shipboard fathometer. If the operator "felt" the bottom, the instrument was raised and data collection was delayed to allow any resuspended sediment to dissipate as determined by monitoring real-time turbidity readings. Samples were collected from each location at one depth; mid-water column above Dundee Dam and 3 feet from the bottom at RMs 4.2 and 10.2. Water quality readings were continuously collected and monitored during sampling.

From each location, three types of samples were collected: one sample of solids (collected on a glass fiber filter [GFF]) separated from the water column to be analyzed for polychlorinated biphenyl congeners and homologs (PCBs), and polychlorinated dibenzodioxins/ polychlorinated dibenzofurans (PCDD/Fs); one sample of sorption medium (collected on polyurethane foam (PUF) media within a stainless steel cartridge)through which the filtrate was passed (representative of the dissolved fraction) to be analyzed for PCBs and PCDD/Fs; and four time-weighted composite samples of whole water for analyses of particulate organic carbon (POC), dissolved organic carbon (DOC), and suspended solids concentration (SSC). The POC, DOC and SSC samples were collected from a 20L carboy, calibrated to fill simultaneously with the collection of PCDD/F and PCB samples.

CDM Smith accepted split samples from RM 10.2 during both high volume sampling events as described in the sections below.

Summary of Daily Activities
The following is a summary, by event, of activities observed during CDM Smith's oversight of CWCM high volume activities:

Event 1. December 17 and 18 2012
On Monday, December 17, sampling crews collected high volume samples from RM 10.2 and above Dundee Dam. Due to the small size of the vessel used above Dundee Dam, oversight staff were unable to accompany filed crews. Oversight staff were able to board the vessel used at RM 10.2.

During sampling, crews found that suspended solids were higher than anticipated, most likely due to overnight rainfall. Because of this, target samples volumes were revised at Dundee Dam and RM 10.2 to 300 liters (L) and 100 L, respectively. Oversight staff at the RM 10.2 location noted that field crews pumped for approximately 3 hours, stopping multiple time to change filters, to obtain the target 100 L.

Split samples collected during this event were taken at RM 10.2 and consisted of GFF, PUF cartridges, and surface water from the bulk carboy sample. The GFF and PUF samples were analyzed for PCDD/F and PCBs, water samples were analyzed for POC, DOC, and SSC. As per discussion with EPA, no splits were taken of post-PUF filtrate water samples. Copies of split sample COCs are provided in Attachment 2.

Oversight staff were initially told both during the week prior to, and the first day of the high volume event that there would be room on the vessel sampling at RM 4.2 the following day, Tuesday December 18. However, due to the number of field crew required, the addition of an oversight staff member on board would exceed United States Coast Guard (USCG) capacity requirements. This

decision was apparently not communicated to the field personnel oversight staff spoke with. As a result no oversight was conducted at RM 4.2.

Event 2. June 26 and 27 2013

On Wednesday June 26, sampling crews collected high volume samples from RM 4.2 and above Dundee Dam. Due to the small size of the vessel used above Dundee Dam, oversight staff were unable to accompany field crews. Oversight staff were unable to board the vessel used at RM 4.2 due to it's small size, but did accompany crews on a support boat which was able to tie alongside the sampling vessel. At one point during sampling, oversight staff were able to step onto the sampling vessel and perform oversight.

Over the course of sampling, water depths ranged from approximately 18 to 24 feet due to the tide. Because of the fluctuation in depths, crews had to adjust the depth of the intake as needed in order to ensure that it did not come into contact with the river bottom. Because of this, crews were conservative with the placement of tubing in the water column and instead of suspending it 3 feet above river bottom as specified in the QAPP, maintained it approximately an additional 1 to 2 feet higher off bottom. The result was that at any given time over the course of sampling, the intake was approximately 4 to 5 feet above river bottom. Sampling crews used approximately 26 filters over the course of sampling, and pumped a total of 200 L of river water.

On Thursday, June 27, oversight staff observed sampling at RM 10.2 and accompanied crews on a support boat. Oversight staff were unable to step onto the sampling vessel, and at several times during the day had to leave the area with the support boat crew to bring personnel and supplies back to CPG facility. Sampling crews went through 25 filters over the course of sampling, and pumped a total of 550 L of river water. Tubing intake throughout the day was suspended approximately 3 to 5 feet off the river bottom.

Split samples collected were also collected and consisted of GFF, PUF cartridges, and surface water from the bulk carboy sample. The GFF and PUF samples were analyzed for PCDD/F and PCBs, water samples were analyzed for POC, DOC, and SSC. Copies of the COCs of split samples collected are provided in Attachment 2.

QAPP Compliance

All field activities were conducted in accordance with QAPP procedures.

Attachment 1

Copies of Oversight Field Logbook Notes

Location Lower Passaic River Date 12/10/12

Project / Client CWCM / USACE

P. Connelly

11:15 - PC returned to location RM 10.2 to observe collection of 12H-CE01-T102-BS and 12H-CE01-

11:30 - Sample time for 12H-CE01-T102-BS. Water depth = 11.7 feet and sample depth = 8.7 Ft —PC

X = 592149.34 Ft

Y = 719744.66 Ft

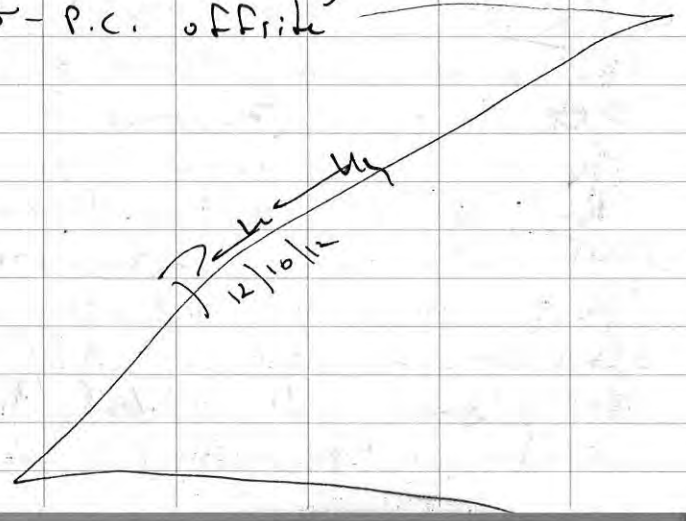
Note = NJ State Plane, NAD83

11:58 - Finished collecting 12H-CE01-T10L-BS

12:08 - Began sampling 12H-CE01-T102-AS. PC Pump is Intake is 3 feet below surface. This sample is MS/MSD —PC

13:45 - Done sampling —PC

14:05 - P.C. offsite



Location Lower Passaic River Date 12-17-12

Project / Client CWCM/USACE

A. Katarzel High volume event

PPE: Modified Level D

Weather: light rain 40°F

Personnel: JR (CM-Smith) OSI, AECOM, Gravity

Objective: oversight and collection of one split sample (High Volume event)

0705 JR arrives at CPG facility

0800 Health and Safety briefing held

0805 depart CPG boat ramp in order to head down-stream to RM 10.2

0830 Arrive at RM 10.2

0835 Gravity Environmental personnel sets up equipment

PR-2900-103 EPA System

PR-2900-102 CPG System

0945 Setup of System 5 continues

1000 one cooler with bottleware and PUFs are not on boat. AECOM personnel will check CPG facility. JR 12-17-12

Location Lower Passaic River Date 12-17-12

Project / Client USACE High Volume event

J. Rabenstein

1054 Start purge on EPA pump in order to prime system.

1119 AECOM starts to purge and prime their filter. All equipment is purged and calibrated.

1202 AECOM ~~purge~~ sample time 21.8 total depth J.R 12-17-12

1215 pump on

1219 Pump off

1240 Note - filters have been getting changed out at a faster then expected pace. Plenty of solids have been getting collected, but liquid volume has been minimal.

1302 Pump on

1305 Pump off - 41 liters collected A total of 20.4 liters has been collected

Total current depth to bottom 20.7'.

J.R 12-17-12

Location Lower Passaic River Date 12-17-12

Project / Client USACE High Volume event

J. Rabenstein

AECOM Collects Sample Comp-1.

1320 Pump on

1323 Pump off

1327 Pump on

1330 Pump off

* 34.95 liters have been collected

1335 Post-Puff Comp-2 sample collected

Current sampling depth is post3 15.2' below water surface

post4 14.8' Sample depth below water

1515 Nine post puff samples have been collected.

* 1524 Split sample time

Sample id 12I-CE05-T102-BW01-C water sample

100 total liters was pumped at RM 10.2

1700 depart site

12I-CE05-T102-BP01-C (filter) PUFF BM01, BM02, BP01

J.R 12-17-12

Location LPR Date 4-9-13

Project / Client USACE

RM10.9 Groundwater Seepage investigation

1130 Location #2 check complete

1200 Location #1 check complete

1215 CMA associates arrive onshore at Lyndhurst fire department boat ramp.

1220 JR is informed that all the data that has been recorded was uploaded onto a CMA computer

1230 JR departs Site

J. R

4-9-13

Location LPR Date 6-7-13

Project / Client USACE

2nd High Flow Event

PPE: Modified Level D

Weather: 60° farenheit, Rain

personnel: JR (CDM Smith)

objective: Split Sampling and oversight

0530 JR arrives at second river on the corner of Mill and Washington Streets in Belleville, NJ. CDM-Smith was informed of a 6am tributary start time.

0555 Ryan McCarthy informs JR that Kris Van Nearson of AECom is heading over here to sample.

0620 KVN arrives

0635 begin equipment setup

0709 13A-CELL-T2R1-AS-C Sample time

0750 Sampling complete

0820 Complete putting away equipment.

0840 Arrive at CPG facility

0900 Bring in supplies and bottleware

6-7-13

Location LPR Date 6-7-13

Project / Client USACE

2nd High Flow event

0930 Discuss logistics with Ryan McCarthy.

1015 depart Site

JR

6-7-13

Location LPR Date 6-20-13

Project / Client USACE

2nd High Flow event

PPE: Modified Level D

Weather: 70°f

Personnel: JR (CDM-Smith)

Objective: Collection of falling limb sample at RM 10.2

1020 JR arrives at River Mile 6.7 behind Burger King fenceline and awaits arrival of vessel.

1025 JR calls Helen of Accom to inform her of arrival.

1050 Board boat

1115 Arrive at RM 10.2

1150 OSI tries to connect YSI. It is not Connecting

1215 YSI is now working.

X 1230 13A-CE21-T102-BS-C Sample time-COMS split

1303 13A-CE21-T102-AS-C Sample time

1340 JR departs boat.

JR

6-20-13

Location LPR Date 6-26-13

Project / Client USACE

2nd High Volume event RM4.2

PPE: Modified Level D

Weather: 70°F

personnel: JR (Consmith) OSI, AECOM

objective: oversight of high volume sampling at RM4.2

0630 JR arrives at Robins Reef boat ramp in Bayonne, NJ to meet OSI.

0645 JR boards OSI support boat and awaits boat from Liberty Landing in Newark

0800 depart Robins Reef

0910 tie up to sampling boat at RM4.2

0915 OSI, AECOM, and gravity environmental start to SETUP equipment

1030 AECOM verifies same flow rate

1042 Pump on

1045 ~~1044~~ Pump off

1045 Filter change

JR 6-26-13

Location LPR Date 6-26-13

Project / Client USACE

2nd High Volume event RM4.2

Note- pump at 18.1 total depth 24' Turbidity 101

1101 Pump back on filter has been changed twice

1103 pump off

1115 NTU has dropped down to 30.

1140 5 filter changes have taken place thus far. Thirty-five liters have been purged

1230 Thirteen filters have been changed. Eighty-Six liters have been pumped.

1245 100 Liters have been collected.

1300 110 Liters have been collected ~~2~~ JR 6-26-13

Note* 13.4' depth of pump. The pump was pulled up to least turbid & water depth. Current NTU is 21.

1309 pump off (filter change); total volume 117 Liters

1312 Filters Changed- pump on

JR 6-26-13

Location LPR Date 6-26-13

Project / Client USACE

2nd High volume event RM4.2

1333 One-hundred and thirty liters have been pumped.

1355 One-hundred and fifty-five liters have been pumped

1408 One hundred and sixty-nine liters have been pumped

1435 Support vessel heads to RM 6.7 to pick up supplies

1450 Arrive at 6.7 and ~~dropoff~~ receive supplies J.R 6-26-13

* Note 200 Liters pumped; 26 filters used

1505 Arrive at RM 4.2. Samples have been collected as planned.

1520 depart RM4.2

1530 Arrive at RM 6.7 to drop samples off.

1535 Depart for Robbin's Reef (Bayonne)

1600 Arrive at Robbin's Reef.

1605 Call George Molnar to update him with status.

1620 depart site

J.R 6-26-13

Location LPR Date 6-27-13

Project / Client USACE

2nd High volume event RM4.2

PPE: Modified Level D

Weather: 75°F

personnel: JR, OSI, AECOM, gravity environmental

objective: High volume Sampling RM4.2

0645 JR arrives onsite and boards boat

0724 depart CPG

0749 Anchor down at RM 10.2, Depth to bottom 10.9 BGS

* ~~Note~~ J.R 6-27-13

0756 OSI, AECOM, and Gravity Environmental Start to setup equipment

0900 Gravity Environmental is Currently Priming and Calibrating equipment; 10.6 NTU

0905 ~~12.7 dtb; 8~~ J.R 6-27-13 14' dtb; sample depth ~~8~~ 11' J.R 6-27-13

0910 Pumps on

0954 NTU 19;

1010 73 liters pump; NTU 20;

J.R 6-27-13

Location LPR Date 6-27-13

Project / Client USACE

2nd High volume event; RM10.2

first filter changed
12.3 sample depth; 16.2 TD

1120 One-hundred and fifty-four liters have been pumped

*1125 Regular filter Sampled
ID - 13C-CE05-T102-BP01-JAR-C * Note all sample times will reflect pump off time at the end of day

1345 305 Liters; 14 filters changes

* Note-pump has been roughly 3 to 5 feet off of river bottom throughout sampling.

1405 Effluent samples are currently being collected.

1415 335 Liters pumped

* AECOM employee Katelyn Slyvester left the site due to heat exhaustion. She has thrown up and stopped sweating. She has been transported to the hospital.

1455 400 Liters have been pumped

D.R 6-27-13

Location LPR Date 6-27-13

Project / Client USACE

2nd High Volume event; RM10.2

1545 TD 16.2; Sample depth 11.4; 430 Liters pumped

1600 460 Liters have been collected thus far.

1649 501 liters have been collected

1715 540 liters have been collected

*1723 Sample time for all Split Samples Collected today

Sample #	Analyses
13C-CE05-T102-BM01-PUFF-C	PCBC-PCDD-PCDF
13C-CE05-T102-BM02-PUFF-C	
13C-CE05-T102-BP01-GFF-C	
13C-CE05-T102-BP01-JAR-C	POC-DOC SSC

Note- BM-01 was first puff inline
BM02 was second puff inline
GFF was glass fiber filter
Jar was flat regular filters
BW01 was prefiltered
BW02 " "

1745 JR received Pre-filtered bottleware which was warm. These containers were not kept

D.R 6-27-13

Location LPR Date 6-27-13

Project / Client USACE

2nd High Volume event; RM 6.2

on ice.

1800 hv Sampling complete

1850 Arrive @ + boat dock and depart.

6-27-13

Location Date

Project / Client

Attachment 2
Copies of Signed Chain of Custodies

USEPA
DateShipped: 6/27/2013
CarrierName:
AirbillNo: Hand Deliver

CHAIN OF CUSTODY RECORD
Lower Passaic River - CWCM R2
Case Complete: False
Cooler #:

No: 2-062413-155101-0032
Lab: EPA-DESA laboratory
Lab Address: 2890 Woodbridge Ave
Lab Phone: 7323216707

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	13C-CE05-T102-BW02-C	RM 10.2	Particulate/Dissolved organic carbon	Surface Water	6/27/2013	17:32	1	500 mL poly	4 C	N
	13C-CE05-T102-BW02-C	RM 10.2	Suspended solids concentration	Surface Water	6/27/2013	17:32	1	1 L poly	4 C	N

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time

USEPA Generic COC (LAB COPY)

DateShipped: 6/27/2013
CarrierName: FedEx
AirbillNo: 796078601500

CHAIN OF CUSTODY RECORD

Lower Passaic River
Case Complete: False
Cooler #:

No: 2-062113-171729-0031

Lab: AXYS Analytical Services Ltd.
Lab Address: 2045 Mills Road W.
Lab Phone: 8883730881

Sample #	Matrix/Sampler	Coll. Method	Analysis/Turnaround	Tag/Preservative/Bottles	Station Location	Collected	For Lab Use Only
13C-CE05-T102-BM01-PUFF-C	PUF/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	06/27/2013 17:32	
13C-CE05-T102-BM02-PUFF-C	PUF/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	06/27/2013 17:32	
13C-CE05-T102-BP01-GFF-C	glass fiber filter/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	06/27/2013 17:32	
13C-CE05-T102-BP01-JAR-C	regular filter/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	06/27/2013 17:32	

Special Instructions:

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time

USEPA Generic COC (REGION COPY)

DateShipped: 12/18/2012
CarrierName: FedEx
AirbillNo: 794332699660

CHAIN OF CUSTODY RECORD

Passaic - F2L
Case Complete: False
Cooler #:

No: 2-121412-105502-0030

Lab: AXYS Analytical Services Ltd.
Lab Address: 2045 Mills Road W.
Lab Phone: 8883730881

Sample #	Matrix/Sampler	Coll. Method	Analysis/Turnaround	Tag/Preservative/Bottles	Station Location	Collected	Sample Type
12I-CE05-T102-BM01-PUF-C	PUF/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	12/17/2012 15:24	Field Sample
12I-CE05-T102-BM02-PUF-C	PUF/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	12/17/2012 15:24	Field Sample
12I-CE05-T102-BP01-PUF-C	PUF/ JR	Grab	PCBC-PCDD- PCDF (PUF)	A (4 C) (1)	RM 10.2	12/17/2012 15:24	Field Sample
12I-CE05-T102-BP01-SS-C	Seperated Solids/ JR	Grab	PCBC PCDD PCDF (Seperated Solids)	N (4 C) (2)	RM 10.2	12/17/2012 15:24	Field Sample

Special Instructions:

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	J. K	12-18-12									

USEPA
DateShipped: 12/18/2012
CarrierName:
AirbillNo: Hand Deliver

CHAIN OF CUSTODY RECORD
Passaic - F2L
Case Complete: False
Cooler #:

No: 2-121412-104812-0029
Lab: EPA-DESA laboratory
Lab Address: 2890 Woodbridge Ave
Lab Phone: 7323216707

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	12I-CE05-T102-BW01-SW-C	RM 10.2	Particulate/Dissolved organic carbon	Surface Water	12/17/2012	15:24	1	500 mL poly	4 C	N
	12I-CE05-T102-BW01-SW-C	RM 10.2	Suspended solids concentration	Surface Water	12/17/2012	15:24	1	1 L poly	4 C	N

Special Instructions:

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		12-18-12									